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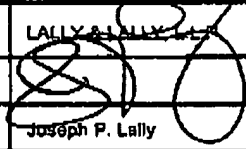Approved for use through 07/31/2006. OMB 0651-0031
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Application Number	09/498234
Filing Date	02/03/2000
First Named Inventor	Baumgartner
Art Unit	2654
Examiner Name	Armstrong
Attorney Docket Number	AUS920879US1

Total Number of Pages in This Submission: **14**

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Firm Name	LALLY & LALLY LLP
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Printed name	Joseph P. Lally
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Applicant:	**Baumgartner** *et al.*	§	Group Art Unit:	**2654**
		§		
Serial No.:	**09/498234**	§	Examiner:	**A. Armstrong**
		§		
Filed:	**02/03/2000**	§	Attorney Docket:	**AUS990879US1**
		§		
For:	**METHOD AND SYSTEM OF**	§		
	AUDIO FILE SEARCHING	§		

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APPEAL BRIEF

MAIL STOP APPEAL BRIEF
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

Dear Sir:

This paper is submitted pursuant to 37 CFR § § 41.31, 41.37 in furtherance of the Notice
of Appeal filed on May 12, 2005 following a final office action (the "Final Action") mailed
February 10, 2005, to appeal final rejections issued by the Examiner on claims in the above
referenced patent application to the Board of Patent Appeals and Interferences ("Board").

TABLE OF CONTENTS

Commissioner for Patents
Appeal Brief
Page 3 of 12

Serial: 09/498234
Art Unit: 2654
Examiner: A. Armstrong
Docket No. AUS990879US1

I. REAL PARTY IN INTEREST

The above referenced application is wholly assigned to International Business Machines Corporation ("IBM"), A New York corporation having a principle place of business at Armonk, New York.

II. RELATED APPEALS AND INTERFERENCES

There are no related appeals or interferences known to Appellant that will directly affect, be directly affected by, or have a bearing on the Board's decision in this appeal.

III. STATUS OF CLAIMS

Claims 1, 2, 4-8, 15, and 18-21 are pending in this application. All pending claims stand rejected under the Final Action. More particularly:

Claims 1, 2, 4-6, 15, and 18-21 rejected under 35 USC § 103(a) as being unpatentable over Wilcox., U.S. Patent No. 5,199,077, (hereinafter Wilcox) in view of Boman et al., U.S. Patent No. 6,480,819, (hereinafter Boman) in further view of Lee, U.S. Patent No. 6,067,520, (hereinafter Lee).

Claims 7 and 8 were rejected under 35 USC § 103(a), as being unpatentable over Wilcox in view of Boman et al. and Lee, and further in view of well known prior art.

The rejections of all pending claims are appealed herein. The rejection of independent claims 1 and 15 and dependent claims 19 and 20 are argued specifically.

IV. STATUS OF AMENDMENTS

No amendments have been filed subsequent to the final rejection.

V. SUMMARY OF CLAIMED SUBJECT MATTER

Independent claim 1 defines a system for locating a desired audio segment within a storage device. The system includes an input device (e.g., keyboard 104) and a media player (108) [Page 4, lines 11-14]. The input device (104) transmits input sample text [page 4, lines 14-

Commissioner for Patents
Appeal Brief
Page 4 of 12

Serial: 09/498234
Art Unit: 2654
Examiner: A. Armstrong
Docket No. AUS990879US1

17] that is indicative of the audio segment [page 2, lines 9-11]. The media player (108) plays audio content stored on the storage device (e.g., disk 109) [page 4, lines 17-19]. The system has a sample converter (104) that generates an input sample diphthong sequence (105) upon receiving the input sample text (103) from the input device [page 5, lines 4-6]. The input sample diphthong sequence (105) is a digital representation of the diphthong components of the input sample [page 5, lines 10-17]. An audio converter (122) generates an audio content diphthong sequence (125) comprising a digital representation of the diphthong components of the audio content of the storage device (page 7, lines 19-22). A comparator (130) detects a match between the input sample diphthong sequence (105) and a portion of the audio content diphthong sequence (125) [page 7, line 25 to page 8, line 2].

Independent claim 15 defines a computer program product for locating an audio segment in a storage device that includes computer executable instructions [see page 9, lines 25 to 28] including first converter means (104) for generating a first diphthong sequence (105) upon receiving input sample text (103) where the first diphthong sequence (105) is indicative of the input sample text. The product includes second converter means (122) for generating a second diphthong sequence (125) from audio information stored on the storage device 109). The product includes comparator means (130) for locating a portion of the second diphthong sequence (125) that matches the first diphthong sequence (105) according to a specified set of match criteria.

The elements of independent claim 15 may be construed as means-plus-function elements in which case the structure or acts described in the specification corresponding to the first converter means include sample converter (104) [page 5, lines 4-9] and step (144) [page 10, lines 17-20]. The structure or acts corresponding to the second converter means include audio converter (122) [page 7, lines 13-23], step 146 [page 10, lines 21-24]. The structure or acts corresponding to the comparator means include string comparator 130 [page 7, lines 24 through page 8, line 6] and steps 148, 152, and 154 [page 10, line 23 through page 11, line 5].

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

The rejection of claims 1, 2, 4-6, 15, and 18-21 under 35 USC § 103(a) as unpatentable over Wilcox (U.S. Patent No. 5,199,077) in view of Boman et al. (U.S. Patent No. 6,480,819), in further view of Lee (U.S. Patent No. 6,067,520).

VII. ARGUMENT

Section 103(a) rejection of Claims 1, 2, 4-6, 15, and 18-21 as unpatentable over Wilcox, Lee, and Boman

Claims 1 and 15

1. No Motivation to Modify Wilcox to Incorporate Mono-syllabic Features of Lee

The Final Action fails to establish a prima facie case of obviousness under Section 103(a) because there is no motivation to modify the cited references to arrive at the claimed combination. Specifically, there is no motivation to modify Wilcox to incorporate the mono-syllabic features of Lee. A prima facie case of obviousness under Section 103(a) requires some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings and a reasonable expectation of success. MPEP 2131. Moreover, the teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in applicant's disclosure. MPEP 2131 (citing *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991)).

There is no motivation and reasonable expectation of success to modify Wilcox to incorporate the mono-syllabic teachings of Lee because Wilcox explicitly teaches away from the mono-syllabic approach and indicates a lower expectation of success for a mono-syllabic implementation.

The claims under consideration recite the generation of diphthong sequences in an invention for locating specified audio segments on disk or other storage. Diphthongs are explicitly defined in the specification as mono-syllabic speech sounds [page 5, line 5]. The Final

Commissioner for Patents
Appeal Brief
Page 6 of 12

Serial: 09/498234
Art Unit: 2654
Examiner: A. Armstrong
Docket No. AUS990879US1

Action correctly acknowledges that Wilcox does not teach the use or generation of diphthongs. The Final Action supports the Section 103(a) of the claims under consideration relying on limitations taught in Lee. Lee teaches the processing of monosyllables in a system for converting Mandarin speech into Chinese characters. The Final Action states that it would have been obvious to one skilled in the art to modify Wilcox for one reason, namely, "to implement monosyllables as the acoustic units of recognition as taught by Lee, <u>for the purpose of improving recognition results</u>."

Directly contradicting the Final Action's stated basis for combining the references, Wilcox states that its system "works better for multi-syllable words than for single syllable words." (Wilcox, Column 4, lines 31-33). Wilcox further supports this statement while discussing FIG. 14 depicting experimental results indicating that the probability of a false detection in its word spotting algorithm increases from 1% per sentence to nearly 10% per sentence for a monosyllabic word (column 10, lines 44-48). Wilcox concludes from these results that "better keyword detection and lower false alarm rates are obtained using keyword with more syllables" and suggests that users use "phrases rather than single words for editing and indexing applications."

As stated in MPEP 2143.01, "[t]he test for obviousness is what the combined teachings of the references would have suggested to one of ordinary skill in the art...Where the teachings of two or more prior art references conflict, the examiner must weigh the power of each reference to suggest solutions to one of ordinary skill in the art, considering the degree to which one reference might accurately discredit another." Citing *In re Young*, 927 F.2d 588, 18 USPQ2d 1089 (Fed. Cir. 1991). In this case, the cited references would not have suggested to one of ordinary skill in the art a diphthong-based implementation of Wilcox. One of ordinary skill in the art would recognize Lee as an application specific solution in which the nature of Mandarin speech and its relationship to Chinese characters motivated Lee to use a mono-syllabic approach. See, e.g., Lee, column 4, lines 20-26. One of ordinary skill would not, however, have been motivated to modify Wilcox to employ monosyllable acoustic units in the face of Wilcox's explicit statements and experimental results indicating that the false detection rate increases for monosyllables.

Because the cited references would not have motivated one of ordinary skill in the field to modify Wilcox to incorporate monosyllable acoustic units, Appellant submits that the Final

Commissioner for Patents
Appeal Brief
Page 7 of 12

Serial: 09/498234
Art Unit: 2654
Examiner: A. Armstrong
Docket No. AUS990879US1

Action does not establish a prima facie case of obviousness. Accordingly, Appellant respectfully requests the Board to reverse the Section 103(a) rejection of the claims under consideration and remand the matter to the Examiner for further prosecution.

2. References Fail to Teach All Claimed Limitations

The Final Action fails to establish a prima facie case of obviousness under Section 103(a) because the cited references do not teach or suggest all of the claimed limitations. Specifically, the claims under consideration recite "an input device for transmitting input sample text" (claim 1) and "responsive to receiving input sample text" (claim 15). The cited references do not teach the use of text as the input to an audio detection application. A prima facie case of obviousness under Section 103(a) requires that the references must teach or suggest all the claim limitations.

The Final Action correctly acknowledges that Wilcox does not teach that the input is a text sample. Supporting the obviousness rejection of the claims under consideration, the Final Action states that "Boman teaches an automatic search of audio channels by matching spoken words against closed-caption audio content, which converts spoken input into text for searching." Appellant has emphasized the words "spoken input" used by the Final Action in describing the teachings of Boman because these words clearly differentiate Boman's input (spoken input) from the input to the claimed invention's (text input). Boman is summarized concisely in the first three lines of the patent: "The present invention relates generally to interactive television and more particularly, to a system that allows the user to select channels by spoken request." While Boman does refer to text when it describes functionality "to detect closed caption text or audio channel speech that matches the user's previously spoken request" (Boman, column 2, lines 3-5), this passage and others like it always refer to the invention's input as spoken input. Boman is motivated by the desire to enable a television viewer, who may have 200 channels or more from which to select, a user friendly way to select a desired channel. As such, Boman explicitly teaches a speech input system to fulfill this desire and does not either teach or suggest text input as a suitable alternative. Boman states that existing on screen programming guides, which are activated through remote control keypad entries analogous to text input, are not adequate for a system having a large number of channels.

Commissioner for Patents
Appeal Brief
Page 8 of 12

Serial: 09/498234
Art Unit: 2654
Examiner: A. Armstrong
Docket No. AUS990879US1

Because the cited references neither teach nor suggest the claimed limitation of text input, the Final Action fails to establish a prima facie case of obviousness. Accordingly, Appellant respectfully requests the Board to reverse the obviousness rejection of the claims under consideration and remand the Application to the Examiner for further prosecution.

3. No Motivation to Modify Wilcox to Incorporate Text Input

Assuming for the sake of argument that Boman does teach or suggest the use of text input, the Final Action still fails to establish a prima facie case of obviousness because there is no motivation or suggestion to modify Wilcox to incorporate text input. As stated above, a prima facie case of obviousness requires the existence of a motivation or suggestion to combine references to arrive at the claimed combination.

There is no motivation to modify Wilcox to incorporate text input because the features of Wilcox are uniquely applicable to a speech recognition system. The Wilcox abstract indicates that Wilcox allows a speaker to specify keywords dynamically and to train the system via a single repetition of a keyword. Non-keyword speech is modeled using prerecorded samples for continuous speech. The application is intended for interactive applications such as the editing of voice mail or mixed media documents and for keyword indexing in single-speaker or audio or video recordings. (See, Wilcox Abstract). In summary, Wilcox is unambiguously a speech recognition system and, more particularly, a word spotting system in which speaker utterances are modeled as vectors that describe sound. Moreover, Wilcox is a speaker-dependent application in which differences between the speech characteristics of different users are accounted for in the speech models. Thus, for example, Wilcox lists as its first objective, a system for spotting a keyword spoken by a talker in previously recorded speech by the same talker. (Wilcox, column 2, lines 14-16).

The Final Action states that it would have been obvious to modify Wilcox to allow for textual input for the purpose of providing access to a user unable to vocalize a request. Appellant respectfully disagrees. All of the significant features of Wilcox are directed at modeling and detecting speaker-dependent characteristics which are not applicable for a user who cannot vocalize a request. Referring to FIG 2 element 20 of Wilcox, for example, the first step in the Wilcox wordspotting method is to analyze previous utterances of the same talker to create the

initial and background speech models for the speaker. This step is a necessary requirement to take advantage of Wilcox's speaker-dependent features. Because a user who cannot vocalize a request cannot provide a sample of his or her previous utterances, Wilcox is effectively inoperable for users unable to vocalize requests.

Because the cited references would not have motivated one of ordinary skill in the field to modify Wilcox to incorporate text input, Appellant submits that the Final Action does not establish a prima facie case of obviousness. Accordingly, Appellant respectfully requests the Board to reverse the Section 103(a) rejection of the claims under consideration and remand the matter to the Examiner for further prosecution.

Claims 19

The Final Action fails to establish a prima facie case of obviousness under Section 103(a). Claim 19 recites a limitation in which the first and second diphthongs are compared using an "exact" matching criteria (as distinguished in the specification from a fuzzy criteria). Although the Final Action rejected claim 19, Appellant is unable to find any reference to the claim or the claim limitations in the Final Action. Because the burden of establishing the prima facie case of obviousness lies with the Examiner, Appellant submits that the Final Action does not establish a prima facie case of obviousness for claim 19.

Claim 20

The Final Action fails to establish a prima facie case of obviousness under Section 103(a). Claim 20 recites a limitation in which the first and second diphthongs are compared using a "fuzzy" matching criteria (as distinguished in the specification from an exact criteria). Although the Final Action rejected claim 20, Appellant is unable to find any reference to the claim or the claim limitations in the Final Action. Because the burden of establishing the prima facie case of obviousness lies with the Examiner, Appellant submits that the Final Action does not establish a prima facie case of obviousness for claim 20.
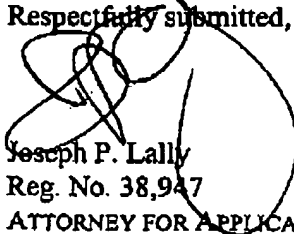
Commissioner for Patents
Appeal Brief
Page 10 of 12

Serial: 09/498234
Art Unit: 2654
Examiner: A. Armstrong
Docket No. AUS990879US1

CONCLUSION

In view of the foregoing, Applicant submits that the pending claims are allowable over the cited references and would respectfully request the Board to reverse the pending rejections and remand the application to the Examiner for reconsideration consistent with an order that the Examiner allow this case unless a proper rejection of the claims can be made.

Respectfully submitted,

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JPL/mmm

VIII. CLAIMS APPENDIX

TEXT OF CLAIMS PRESENTED ON APPEAL:

1 (previously presented). A system for locating an audio segment within a storage device, comprising:

an input device suitable for transmitting input sample text indicative of the audio segment;

a media player suitable for playing audio content stored on the storage device;

a sample converter configured to generate an input sample diphthong sequence in response to receiving the input sample text from the input device, wherein the input sample diphthong sequence comprises a digital representation of the diphthong components of the input sample;

an audio converter configured to generate an audio content diphthong sequence comprising a digital representation of the diphthong components of the audio content of the storage device; and

a comparator configured to detect a match between the input sample diphthong sequence and a portion of the audio content diphthong sequence.

2 (previously presented). The system of claim 1, wherein the input device comprises a keyboard.

3 (canceled).

4 (original). The system of claim 1, wherein the input device comprises the media player and the input sample comprises information recorded on a storage media.

5 (original). The system of claim 1, wherein the comparator is further configured to produce a signal indicative of the location within the storage device of the matching portion of the audio content diphthong sequence.

6 (original). The system of claim 5, further comprising a media player configured to receive the location signal from the comparator and to advance the storage device to the location indicated by the location signal.

7 (original). The system of claim 1, wherein the storage medium comprises a compact disc.

8 (original). The system of claim 1, wherein the storage medium comprises a digital video disc.

9-14 (canceled).

15 (previously presented).   A computer program product for locating an audio segment in a storage device, the computer program product comprising a computer readable medium configured with processor executable instructions, comprising:

> first converter means for generating a first diphthong sequence responsive to receiving input sample text, wherein the first diphthong sequence is indicative of the input sample text;

> second converter means for generating a second diphthong sequence from audio information stored on the storage device; and

> comparator means for locating a portion of the second diphthong sequence, wherein the located portion of the second diphthong sequence and the first diphthong sequence match according to a specified set of match criteria.

16 (canceled).

17 (canceled).

18 (original).   The computer program product of claim 15, wherein the comparator means includes means for indicating the location within the storage device of the audio information corresponding to the second diphthong sequence.

19 (original).   The computer program product of claim 15, wherein the match criteria require exact match between the first and second diphthong sequence.

20 (original).   The computer program product of claim 15, wherein the match criteria are fuzzy criteria.

21 (original).   The computer program product of claim 15, wherein the computer readable medium comprises a storage medium is one of a floppy diskette, hard disk, CD ROM, or magnetic tape.

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